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## Spelling, Handwriting, and Process: Writing Instruction Strategies for Students with Intellectual and Learning Disabilities

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#### **Peer Review**

This work has undergone a double-blind review by a minimum of two faculty members from institutions of higher learning from around the world. The faculty reviewers have expertise in disciplines closely related to those represented by this work. If possible, the work was also reviewed by undergraduates in collaboration with the faculty reviewers.

#### **Abstract**

This manuscript examines how educators can improve their writing instruction for students with intellectual and learning disabilities. It outlines the challenges that these students face in writing and describes research conducted in these areas of need. The goal was to examine many studies and compare the methods used in them, with the objective of finding the most effective research-based practices to use in intermediate elementary classrooms. Specifically, this work analyzes writing in three different components: spelling, handwriting, and the writing process. Additionally, suggestions are included for pre-service teachers and early career in-service teachers.

#### **Keywords**

writing studies, elementary education, intellectual disabilities, learning disabilities, disability studies

## INTRODUCTION

Learning to write, and then writing to learn, can be challenging for some students. In the upper elementary grades, writing becomes a major focus of the curriculum as older students are expected to articulate their thoughts across all subjects. This shift can be challenging to all students; according to the National Assessment of Education Progress (NAEP), only 28% of fourth graders performed at a proficient level in writing assessments (National Center for Education Statistics, 2004). This poses a significant challenge for students with cognitive disabilities, as evidence of their writing abilities may be lower than their neurologically diverse peers (Deatline-Buchman and Jitendra, 2006). For novice and (even) experienced teachers, this is a pressing issue warranting further exploration. Through the lens of a beginning teacher, this article explores the question of how to improve writing instruction for neurologically diverse elementary students.

**Terms: Learning versus Intellectual Disabilities.** This discussion of writing instruction improvement will focus on two different sets of cognitive disabilities: learning disabilities (LD), and intellectual disabilities (ID). The U. S. government has only recently passed legislation to assist students with these cognitive disabilities in the classroom, the earliest being the Rehabilitation Act of 1973. More recently, the Individuals with Disabilities in Education Act (IDEA) was revised in 2004, and has done a great deal for students, most notably by providing a federal definition of most disabilities that can be found in children and adults.

According to IDEA, the definition of a learning disability is: a disorder in one or more of the basic psychological processes involved in understanding or in using language,

spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations (2004).

An intellectual disability differs from a learning disability in its cognitive processes, which is also defined in the IDEA legislation: “significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child's educational performance” (2004). The definitions provide structure to support these students with the accommodations they need. By extension, it has helped researchers accurately represent these students in their work.

For our purposes, students with LD and high-academically functioning ID will be grouped collectively and referred to as students with cognitive disabilities (CD). While students with intellectual and learning disabilities vary greatly, the intervention strategies often are similar. This amalgamation of student groups not taken lightly; rather, in an attempt to reach as many practioners as possible, the authors sought out a term that is broad enough so teachers can select strategies that may be tailored to meet the needs of their students.

## STRUGGLES WITH WRITING

Although the writing curriculum is immense, to serve our primary concerns this article focuses on three tenets: spelling, handwriting, and the writing process.

**Spelling.** Students with cognitive disabilities often struggle with spelling as a component of writing. Spelling is an essential part of communicating ideas through writing, and its use spreads across all content areas. As students progress through the intermediate grades, more and more content-specific

vocabulary is introduced. The accurate spelling of such vocabulary is important to communicate specific meaning. According to Deno, Marston, and Mirkin (1982), students with learning disabilities misspell words two to four times more often than their neurotypical peers. This deficiency in turn affects students's ability to put ideas into writing because the student will often pick the word that is easiest to spell rather than the one that best conveys meaning (Goodman, McLaughlin, Derby, and Everson, 2015).

This finding has enormous implications for composition writing for students with cognitive disabilities. In the intermediate grades, spelling is a part of how students are assessed in writing composition, and so may have significant ramifications for on students' educational futures and their ability to be promoted to the next grade level. With the push towards higher-order thinking in K-12 pedagogy, the lack of appropriate vocabulary in a student's composition can misrepresent the student's understanding of the concepts—understanding that is being used to assess both their competency and that of their instructor.

**Handwriting.** Handwriting skills, which require significant fine-motor control, may be more underdeveloped for some neurologically diverse students than of their peers. Specifically, students with intellectual disabilities may have trouble controlling the movement chain to form letters (Varuzza, De Rose, Vicari, and Menghini, 2014). Even with increasing technological support in the classroom, pencil-and-paper writing is still regularly utilized as a primary way for students to communicate their understanding of concepts (Datchuck, 2015). This poses a challenge for some CD students who do not have the handwriting skills necessary to keep up with the traditional output needed in

a classroom. If there are not accommodations set in place, these students may fall behind—conceptually and socially. The writing demands in intermediate classrooms are already high for neurologically diverse students, so for students with CD, it may feel insurmountable.

Handwriting fits into a cognitive skill known as transcription; a student's transcription ability has been found to directly affect composition length and quality (Berninger, Abbot, Ausburger, and Garcia, 2009). Since the cognitive processes of handwriting and composition are directly linked, students with CD who struggle with handwriting may have difficulty composing texts academically similar to their peers.

There are several other negative implications that poor handwriting can inflict on students with cognitive disabilities: poor letter formation can make writing illegible and therefore challenging to assess; and slow writing can decrease the range of text artifacts available for assessment.

These implications can be detrimental for both the student and the teacher. For the student, handwriting difficulty can leave the student feeling discouraged from writing at all as they view themselves as inferior to their more neurologically diverse peers. For the teacher, it is a struggle to determine how to assess a student with handwriting difficulty. By the time a student reaches the intermediate grades, the focus of writing instruction has shifted from letter formation to syntax and conventions; there is little time for teachers to devote to handwriting instruction beneficial to students with CD (Datchuck, 2015).

**The Writing Process.** The combination of both spelling and handwriting struggles merge during the writing process.

Handwriting and spelling are not the only processes used while a student is engaged in the writing process, however: Garcia and Fidalgo (2008) contend that “writing is a demanding cognitive task that requires coordinated implementation of a large set of mental processes that must be performed in a simultaneous and recursive manner” (77). This is to say that students, regardless of cognitive ability, struggle with the writing process. The traditional blending of spelling skills with handwriting during academic exercises may actually leave some students behind. For students with CD, the demands of the process often exceed what these students are available to give, thereby mentally overloading students and causing them to shut down (Casas and Ferrer, 2009).

Planning for a writing can be a struggle for all students. The specific difficulties in planning for CD students may come from the inability or difficulty with accessing the knowledge and memories that pertain to the topic a student is writing about; students with CD may have a hard time retrieving this information. In addition, traditional academic programs may fall short in thoroughly addressing the needs of neurologically diverse students because of the lack of explicit instruction in advanced planning strategies. Students with CD require the extra support that planning intervention can provide (Santangelo, 2014).

During the actual production of the essay, students with CD may create work that is below the traditional academic benchmark. Some students with disabilities may not have the metacognitive abilities of their neurotypical peers: their ability to self-evaluate may be diminished, and they may focus on the concrete demands of the writing, instead of focusing on the use of the many processes needed to write (Garcia and Fidalgo, 2008). The combination of these experiences may hinder the multifaceted cognitive process needed to produce

traditional written expression of ideas. Difficulty with thinking about their own writing makes organizing their own thoughts into written information difficult for students with CD. Consequently, some may end up with short, undetailed products (Deatline-Buchman and Jitendra, 2006). Students with CD may also have difficulty in low-level text production. Namely, these students lack the automaticity to produce and correctly spell low-level and content-specific words, so they will use different words that do not convey the same ideas (Santangelo, 2014). To maximize student success with planning for and production of written work, specific strategies may be beneficial.

## WRITING STRATEGIES

## SUPPORT

In this section, we identify and detail several examples from the research that examine how to overcome the difficulties that students with CD have in writing. Much of the research is compiled from case studies that address the needs of diverse students with different types of learning disabilities and intellectual disabilities. This section is intended to outline broad ideas that practioners may find useful in tailoring their pedagogy to meet the individual needs of these students.

**Spelling.** Research has been conducted to see if these struggles can be rectified using different intervention strategies. The Cover, Copy, Compare (CCC) method involves a student first examining target (or sight) words, then tracing them from a dotted outline, and finally covering up their tracings to write out the sight words themselves. Intervention using CCC was effective in improving students’ abilities to spell teacher provided content-based weekly spelling words (Manfred, McLaughlin, Derby, Everson, 2015). Likewise, the

explicit instruction of words and letter sounds, even in the intermediate grades, was effective to teach word attack skills to students with CD. This intervention could be used to close the spelling gap left open from the primary grades.

Berninger, Nagy, Tanimoto, Thompson, and Abbot (2014) employed the use of technology to improve writing skills for students with CD. For spelling specifically, they used an iPad application (or app) that involved the use of several different word attack skills such as phonemic and morphemic analysis. While this study applied different methods of spelling intervention, it accomplished the same results as the first study. The researchers saw an improvement in the spelling ability of the study's students through explicit instruction of letter sounds and word meanings. The same conclusion from both of these studies posits that explicit instruction of these skills is an effective way to bridge the spelling gap between students with CD and their peers.

**Handwriting.** Some students with CD have a variety of challenges that might impede their handwriting, which is considered a pillar of writing ability in the K-12 classroom. These difficulties can range from poor letter formation to the inability to space, size, or format written artifacts correctly. In order to bridge the gap between neurologically diverse students and their counterparts, especially in the intermediate grades, remediated handwriting instruction is needed.

Successful intervention for handwriting can be done in three steps. First, instructors collect varied work samples of writing to assess the problem. Second, instructors analyze those samples and identify the impediment. Finally, a solution is determined, typically consisting of modeling and individual motor-skill practice

(Datchuck, 2015). In addition to these strategies, Berninger, Abbot, Ausburger, and Garcia (2009) posit that students with CD can better perform through the use of technology and should be allowed to use assistive device for assignments. Utilization of assistive technology is a viable alternative for students if traditional handwriting interventions and support fail to meet their needs.

**The Writing Process.** When comparing research, it is easy to see a trend of what works with neurologically diverse students and what does not. After identifying the some of the challenges traditional curriculum and experiences present for neurologically diverse students, researchers have come up with proposed solutions that can help close the ability gap between CD students and their neurotypical peers.

Although there are numerous studies on remedial writing instruction, there is a great variety of findings. A popular model for teaching writing to students who struggle is the Self-Regulated Strategies Development (SRSD) Model, developed by Harris, Lane, Graham, Driscoll, Sandmel, Brindle, and Schatschneider (2012). This model involves explicitly teaching the processes and skills to overcome the complexity of the writing process. Gradually, the teacher gives the reins to the students and encourages them to self-monitor their work.

Harris et al. (2012) also employed the use of another strategy to help struggling writers called the TREE model. T requires students to include a Topic Sentence. R is for students to provide Reasons for the topic. The first E requires the students to Examine the audience's perspective, while the last E is used so that students provide an Ending for their compositions.

The use of a specific strategy instruction occurs frequently in writing

instruction research, as it is considered to be the most effective way to support neurologically diverse students. For students with specific intellectual disabilities, explicit instruction needs to start at a basic level, such as the introduction of sentences and how they fit into paragraphs. Two different studies approach sentence instruction explicitly. In Yamamoto and Miya's (1999) article, students with intellectual disabilities used computer instruction to combine sentences and construct meaning. In Rousseau, Krantz, Poulson, Kitson, and McClannahan's (1994) piece, teacher-led instruction was used to build sentence-construction skills through a combination of words and their concepts. Joseph and Konrad (2009) compared the effects of these studies to each other and found that the instruction used in both achieved significant gains in the writing abilities for students with intellectual disabilities. In addition, both were effective approaches to remediating sentence composition instruction. This bottom-up approach to writing is necessary in order to scaffold students who were not successful with the instruction provided in the earlier grades.

## APPLICATIONS

How can educators, novice and experienced alike, take the next step and apply this information to the neurologically diverse students in their classrooms? The following recommendations are not intended to be all-inclusive, but rather serve as a springboard from which educators might tailor their instructional practices to best meet the needs of their students.

**Spelling.** By the time a student has reached the intermediate grades, a majority of spelling skills have been taught. When a child asks for help spelling a word, the teacher will often tell them that they should use their previous knowledge from word

attack skills to find out the spelling. What if a student has never mastered these skills, however, or has never been taught them in the first place? For neurologically-diverse students, this could be the case. Little instructional time is dedicated to explicit spelling instruction in intermediate grades, which seems counter-intuitive because, in these grades, spelling starts to be included as an assessed component of class assignments and standardized tests. Scaffolded development of spelling skills, taught through explicit instruction, would benefit neurologically diverse students.

Many of the word attack skills neurologically-typical students take for granted are developed through the mental processes incorporated with reading skills. Some students with CD may struggle with developing skills through metacognition, and therefore need explicit instruction. The research that has been conducted on this topic supports this suggestion. The intervention strategies used by Berninger et al. (2014) as well as McLaughlin, Derby, and Everson (2015) involve the use of explicit instruction for word attack skills such as phonics remediation and morphemic analysis work. The use of Berninger et al. (2014) Cover, Copy, and Compare method would be inconvenient to use on a small group in a classroom with one teacher, but it can be modified to a whole group activity that has the potential to improve the spelling skills of the entire classroom population. If a teacher is looking for small group spelling intervention or a spelling center, it would be more beneficial for them to use work of Manfred et al. (2015) that involves the use of an iPad app to allow students to individually complete spelling instruction.

**Handwriting.** In the intermediate grades, there is little handwriting instruction. For neurologically diverse students for whom

handwriting instruction has been insufficient, this can be challenging.

As mentioned previously, Datchuck (2015) outlined a handwriting intervention framework for classroom teachers. According to his research, a teacher must first identify the challenging areas, then analyze the problem, and finally determine a solution. If a teacher suspects a student may need handwriting intervention, they should collect a broad scope of samples for evidence and use these to identify and analyze the problem. The problem could be any number of things from letter formation to word spacing to paragraph formation. Technology, such as an iPad app, can model the correct letter formation and word spacing allowing students to practice independently at a workstation (Berninger et al., 2014). If a student needs the extra support of an adult modeling letter formation and fine motor functions, then a teacher should find ways to provide one-on-one assistance. By having an adult work individually on handwriting with a student, the adult can correct not only the student's letter formation and word spacing, but also the student's grip on the pencil, which is typically the source of motor control difficulty.

**The Writing Process.** Composition in the intermediate grades can pose challenges for every student. Based on several pieces of research, the difficulty for students with CD is typically linked with the cognitive demand of the writing process. When writing, several mental processes must run in conjunction with each other as a seamless unit (Garcia and Fidalgo, 2008). For some neurologically diverse students, the high demand of the task may seem overwhelming. According to a range of scholars, the most beneficial intervention for the writing process proves to be explicit strategy and skill instruction.

For the aims of this discussion, we have combined students with intellectual disabilities and specific learning disabilities. The purpose of this was to research the similar difficulties that both groups face. When proposing concrete classroom interventions for these students, a gap between these two groups emerged. According to Yamamoto and Miya (1998) as well as Rousseau et al. (1994), students with intellectual disabilities often need scaffolding at a lower level than their counterparts with learning disabilities. Both of the interventions in their research broke down the writing process into its simplest unit: sentences. Since some students with intellectual disabilities have different brain functions, this bottom-up intervention is the most effective means to scaffold grade-level composition writing. When these students understand the process of sentence composition and how it works within the writing process, then they can proceed to interventions that break down writing into larger pieces.

Some students with learning disabilities are able to start at a higher of level of intervention in the writing process than others. Since it may still be difficult for these students to combine all the mental processes that are incorporated into composition writing, they also greatly benefit from the use of explicit instruction. One technique used by Garcia and Fidalgo (2008) has proved to be a successful way to scaffold students with LD to understand the thoughts behind writing. Specifically, they used a graphic organizer and had students sort auditory phrases into different sections. This process helped students conceptualize how to separate the cognitive processes in their minds.

Research has also found that when instruction is broken down to teach the specific skills and strategies of the writing process, students with learning disabilities



succeed. Together, Harris et al. (2012) have developed effective classroom interventions to help scaffold students with LD. The TREE and SRSD models they created have been used in classrooms for some time and are showing positive results in improving composition by students with learning disabilities and their neurologically typical counterparts. In a classroom, these models can scaffold the complexities of the writing process to all students, which is a considerable advantage.

One of the biggest challenges for instructors in the current educational climate is to make sure their students are prepared for future large-scale, academic writing. Through the use of the explicit teaching techniques hitherto described, an educator can work to meet the needs of all their students. Though the writing process may be a challenging task for some neurologically diverse students, the integration of focused and explicit strategies may support students in reaching their academic goals.

## CONCLUSION

The U.S. has long claimed to provide equal education for all students inside its borders. In order to accomplish this, educators must consider the challenges that neurologically diverse students face. One of the largest academic gaps that exist in education today is the disparity between students with and without certain cognitive abilities. The multifaceted processes and concepts that make up writing instruction are often challenging for students with these disabilities. Educators best evolve their praxis when they are given opportunities to reflect on their techniques. In order to do so, studies must continue to be done and research must continue to be conducted that offer models and interventions aware of a diversity of abilities.

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